

Claims

What is claimed is:

- [c1] In a needle comprising a hollow shaft having opposed distal and proximal ends, the distal end having a cutting surface for insertion into a patient, the needle shaft having a lumen extending from the proximal end of the needle shaft and terminating at an opening on the top of the distal end of the needle shaft;

the improvement comprising the cutting surface, wherein the cutting surface is on the bottom of the distal end of the hollow shaft.

- [c2] The needle of claim 1 wherein the cutting surface is from the bottom of the distal end of the hollow shaft to the front of the distal end of the hollow shaft.
- [c3] The needle of claim 1 wherein the needle is adapted to be used where the cutting surface is substantially parallel to the dural fibers, so as to minimize dura cutting and post dural puncture headaches.
- [c4] The needle of claim 1 wherein the sharpness of the cutting surface, as measured by the grams of force required for the needle tip to puncture a sheet of two mil thick polyethylene, is from about 85 grams of force to about 125 grams of force.
- [c5] The needle of claim 1, wherein the needle is adapted to be used in a procedure selected from the group consisting of introducing a spinal cord stimulator, introducing a dorsal column stimulator, introducing a catheter into the epidural space for depositing medications, introducing a catheter into the neural foramen for depositing medications, introducing a catheter into the epidural space for mechanical lysis of adhesions, introducing a catheter into the epidural space for chemical lysis of adhesions, introducing at least one tool into the epidural space for an epiduroscopy, introducing at least one tool into a disk for intradiscal

therapy, introducing a medication into the intrathecal space, introducing a catheter into the intrathecal space, introducing a catheter into the epidural space for chemical lysis of adhesions, introducing at least one tool into the intrathecal space for a percutaneous cordotomy, introducing at least one tool for a cryo-analgesic thermo-coagulation, introducing at least one tool for a radio-frequency thermo-coagulation, introducing at least one tool for a dorsal root ganglionectomy, introducing at least one tool for a percutaneous laser diskectomy, and introducing at least one tool for a vertebroplasty.

- [c6] The needle of claim 1, wherein the needle is used in a procedure selected from the group consisting of introducing a spinal cord stimulator, introducing a dorsal column stimulator, introducing a catheter into the epidural space for depositing medications, introducing a catheter into the neural foramen for depositing medications, introducing a catheter into the epidural space for mechanical lysis of adhesions, introducing a catheter into the epidural space for chemical lysis of adhesions, introducing at least one tool into the epidural space for an epiduroscopy, introducing at least one tool into a disk for intradiscal therapy, introducing a medication into the intrathecal space, introducing a catheter into the intrathecal space, introducing at least one tool into the intrathecal space for a percutaneous cordotomy, introducing at least one tool for a cryo-analgesic thermo-coagulation, introducing at least one tool for a radio-frequency thermo-coagulation, introducing at least one tool for a dorsal root ganglionectomy, introducing at least one tool for a percutaneous laser diskectomy, and introducing at least one tool for a vertebroplasty.
- [c7] The needle of claim 1 wherein the needle is from about 12 gauge to about 16 gauge.
- [c8] A needle comprising:

a hollow shaft having opposed distal and proximal ends, the hollow shaft having a lumen extending from the proximal end of the shaft and terminating at an opening on a top of and proximal to the distal end of the needle shaft; and

a cutting surface at the distal end of the hollow shaft adapted to be inserted into a patient, wherein the cutting surface is on the bottom of the distal end of the hollow shaft.

[c9] The needle of claim 8 wherein the cutting surface begins on the bottom of the distal end of the hollow shaft and ends on the front of the distal end of the hollow shaft.

[c10] The needle of claim 8 further comprising:

a solid rod having opposed proximal and distal ends, the distance between the opposed ends of the solid rod being substantially the same as the distance between the proximal end of an adapter attached to the needle and the distal tip of the needle shaft, the proximal end of the solid rod being secured to a gripping means for holding the rod, the rod being insertable through the proximal end of the adapter such that when the gripping means abuts the proximal end of the adapter, the distal end of the rod extends within the opening in the needle shaft, wherein the rod is adapted to prevent tissue debris from clogging the lumen during introduction of the needle into a patient's body.

[c11] The needle of claim 8, wherein the needle is adapted to be used in a procedure selected from the group consisting of introducing a spinal cord stimulator, introducing a dorsal column stimulator, introducing a catheter into the epidural space for depositing medications, introducing a catheter into the neural foramen for depositing medications, introducing a catheter into the epidural space for mechanical lysis of adhesions, introducing a catheter into the epidural space for

chemical lysis of adhesions, introducing at least one tool into the epidural space for an epiduroscopy, introducing at least one tool into a disk for intradiscal therapy, introducing a medication into the intrathecal space, introducing a catheter into the intrathecal space, introducing at least one tool into the intrathecal space for a percutaneous cordotomy, introducing at least one tool for a cryo-analgesic thermo-coagulation, introducing at least one tool for a radio-frequency thermo-coagulation, introducing at least one tool for a dorsal root ganglionectomy, introducing at least one tool for a percutaneous laser diskectomy, and introducing at least one tool for a vertebroplasty.

[c12] The needle of claim 8, wherein the needle is used in a procedure selected from the group consisting of introducing a spinal cord stimulator, introducing a dorsal column stimulator, introducing a catheter into the epidural space for depositing medications, introducing a catheter into the neural foramen for depositing medications, introducing a catheter into the epidural space for mechanical lysis of adhesions, introducing a catheter into the epidural space for chemical lysis of adhesions, introducing at least one tool into the epidural space for an epiduroscopy, introducing at least one tool into a disk for intradiscal therapy, introducing a medication into the intrathecal space, introducing a catheter into the intrathecal space, introducing at least one tool into the intrathecal space for a percutaneous cordotomy, introducing at least one tool for a cryo-analgesic thermo-coagulation, introducing at least one tool for a radio-frequency thermo-coagulation, introducing at least one tool for a dorsal root ganglionectomy, introducing at least one tool for a percutaneous laser diskectomy, and introducing at least one tool for a vertebroplasty.

[c13] The needle of claim 8 further comprising a beveled surface, wherein the beveled surface is rounded and extends from the distal end of the cutting surface on the bottom of the shaft to the opening of the lumen on the top of the shaft.

[c14] The needle of claim 13 wherein the beveled surface has a radial length less than about 25% of the needle outside diameter.

[c15] The needle of claim 8 wherein the cutting surface has the shape of a hull and extends from the outer edge of the bottom of the needle shaft to the front of the distal end of the shaft.

[c16] A method of installing a catheter in the epidural space comprising:

(a) pushing a needle into the epidural space with a cutting surface of the needle substantially parallel to the dura fibers of the patient, wherein the needle comprises a substantially straight cutting surface;

(b) feeding a catheter through the needle and into the epidural space;

(c) removing the needle, while holding the catheter stationary; and

(d) securing the catheter.

[c17] A needle kit comprising:

a needle;

a lumen through the needle having an end on a top surface of a distal end of the needle;

a stylet adapted to fit inside the lumen of the needle;

a catheter adapted to fit inside the lumen of the needle; and

a hub adapted to connect to a proximal end of the needle;

the improvement comprising a cutting surface on the needle, wherein the cutting surface is on a bottom surface of the distal end of the needle.

- [c18] The needle kit of claim 17 further comprising a spinal needle adapted to fit inside the lumen of the needle.
- [c19] The needle kit of claim 17 further comprising a viewing apparatus, the viewing apparatus comprising a camera adapted to fit inside the lumen of the needle and a monitor adapted to receive and show an output from the camera.
- [c20] The needle kit of claim 17, wherein the needle is adapted to be used in a procedure selected from the group consisting of introducing a spinal cord stimulator, introducing a dorsal column stimulator, introducing a catheter into the epidural space for depositing medications, introducing a catheter into the neural foramen for depositing medications, introducing a catheter into the epidural space for mechanical lysis of adhesions, introducing a catheter into the epidural space for chemical lysis of adhesions, introducing at least one tool into the epidural space for an epiduroscopy, introducing at least one tool into a disk for intradiscal therapy, introducing a medication into the intrathecal space, introducing a catheter into the intrathecal space, introducing at least one tool into the intrathecal space for a percutaneous cordotomy, introducing at least one tool for a cryo-analgesic thermo-coagulation, introducing at least one tool for a radio-frequency thermo-coagulation, introducing at least one tool for a dorsal root ganglionectomy, introducing at least one tool for a percutaneous laser discectomy, and introducing at least one tool for a vertebroplasty.
- [c21] The needle kit of claim 17, wherein the needle is used in a procedure selected from the group consisting of introducing a spinal cord stimulator, introducing a dorsal column stimulator, introducing a catheter into the epidural space for depositing medications, introducing a catheter into the neural foramen for depositing medications, introducing a catheter into the epidural space for mechanical lysis of adhesions, introducing a catheter into the epidural space for chemical lysis of

adhesions, introducing at least one tool into the epidural space for an epiduroscopy, introducing at least one tool into a disk for intradiscal therapy, introducing a medication into the intrathecal space, introducing a catheter into the intrathecal space, introducing at least one tool into the intrathecal space for a percutaneous cordotomy, introducing at least one tool for a cryo-analgesic thermo-coagulation, introducing at least one tool for a radio-frequency thermo-coagulation, introducing at least one tool for a dorsal root ganglionectomy, introducing at least one tool for a percutaneous laser diskectomy, and introducing at least one tool for a vertebroplasty.